

CONSOLIDATED AMENDED CLAIMS

1. Method for enhancing plant crop seed germination and/or seedling emergence and/or growth of a plant crop comprising a treatment in the vicinity of one of a seed, root or plant with a composition which comprises an effective amount of at least one lipo chitooligosaccharide (LCO) together with an agriculturally suitable carrier, wherein said effective amount enhances seed germination and/or seedling emergence and/or growth of said plant in comparison to an untreated plant.

2. The method according to claim 1, wherein said plant crop is a non-legume.

3. The method according to claim 2, wherein said plant crop is selected from the group consisting of Poaceae, Cucurbitaceae, Malvaceae, Asteraceae, Chenopodiaceae, Solanaceae and Brassicaceae.

4. The method according to claim 3, wherein said plant crop is selected from the group consisting of corn, cotton, cucumber, cantaloupe, lettuce, beet, canola and potato.

5. The method according to claim 1, wherein said LCO is obtainable from a rhizobia selected from the group consisting of *Bradyrhizobium japonicum*, *Rhizobium meliloti* and *Rhizobium leguminosarum*.

6. The method according to claim 5, wherein said LCO is present in said composition at a concentration of between about 10^{-5} M to about 10^{-14} M.

7. The method according to claim 5, wherein said LCO is present in said composition at a concentration of between about 10^{-6} M to about 10^{-12} M.

8. The method according to claim 5, wherein said LCO is present in said composition at a concentration of between about 10^{-7} M to about 10^{-10} M.

9. The method according to claim 1, wherein said composition is effective in enhancing seed germination and/or seedling emergence and/or growth of a plant crop grown under field conditions.

10. The method according to claim 1, wherein said plant is a member of the Fabaceae family.

11. The method according to claim 10, wherein said plant is selected from the group consisting of soybean, bean, alfalfa and clover.

12. The method according to claim 10 [or 11], wherein said LCO is obtainable from a rhizobia selected from the group consisting of *Bradyrhizobium japonicum*, *Rhizobium meliloti* and *Rhizobium leguminosarum*.

13. The method according to claim 12, wherein said LCO is present in said composition at a concentration of between about 10^{-5} M to about 10^{-14} M.

14. The method according to claim 12, wherein said LCO is present in said composition at a concentration of between about 10^{-6} M to about 10^{-12} M.

15. The method according to claim 12, wherein said LCO is present in said composition at a concentration of between about 10^{-7} M to about 10^{-10} M.

16. The method according to claim 10, wherein said composition is effective in enhancing seed germination and/or seedling emergence and/or growth of a plant crop grown under field conditions.

17. A method for breaking the dormancy and/or quiescence of a plant comprising a treatment in the vicinity of a seed, tuber, or root of said plant with an effective amount of an agricultural composition comprising at least one lipo chitooligosaccharide (LCO) together with an agriculturally suitable carrier, wherein said effective amount enables a breaking of the dormancy and/or quiescence of said seed, tuber, or root, in comparison to an untreated seed, tuber, or root.

18. The method according to claim 17, wherein said plant is a member of the family of Solonaceae.

19. The method according to claim 18, wherein said plant is a potato.

20. The method according to claim 19, wherein said growth-promoting activity of said composition enables an increase in yield.

21. The method according to claim 19, wherein ~~said composition further comprises gibberellic acid.~~ ^{is present}

26. A method for enhancing seed germination and/or seedling emergence and/or growth of a plant crop comprising an incubation of a rhizobial strain which expresses a lipo chitooligosaccharide (LCO) in the vicinity of one of a seed and/or root of said plant such that said LCO enhances seed germination and/or seedling emergence and/or growth of said plant crop, wherein said inoculation enhances seed germination

and/or seedling emergence and/or growth in comparison to a non-inoculated seed and/or root of said plant.

27. The method of claim 26, wherein said plant crop is a non-legume.

28. The method of claim 27, wherein said plant crop is selected from the group consisting of Poaceae, Cucurbitaceae, Malvaceae, Asteraceae, Chenopodiaceae, Solanaceae and Brassicaceae.

29. The method of claim 28, wherein said plant crop is selected from the group consisting of corn, cotton, cucumber, cantaloupe, lettuce, beet, canola and potato.

30. The method of claim 26, wherein said rhizobia is selected from *Bradyrhizobium japonicum*, *Rhizobium meliloti* and *Rhizobium leguminosarum*.

31. The method of claim 26, wherein said LCO enhances seed germination and/or seedling emergence and/or growth of said plant grown under field conditions.

32. The method of claim 26, wherein said plant crop is a legume in the Fabaceae family and wherein said LCO enhances seed germination and/or seedling emergence and/or growth of said legume grown under field conditions.

35. The method of claim 17, wherein said composition comprises a bacterial strain which expresses said LCO.

36. The method of claim 35, wherein said bacterial strain is a rhizobial strain.